

Commonwealth of Kentucky
Division for Air Quality
PERMIT STATEMENT OF BASIS

CONDITIONAL MAJOR (DRAFT PERMIT) No. F-05-048
TOYODABO MANUFACTURING KENTUCKY, LLC
LEBANON KY.

NOVEMBER 17, 2005

BRIAN BALLARD, REVIEWER

SOURCE I.D. #:	021-155-00033
SOURCE A.I. #:	35886
ACTIVITY #:	APE20050001

SOURCE DESCRIPTION:

Toyodabo Manufacturing Kentucky, LLC manufactures headliners and interior door panels for automobiles. The Division received an initial registration application on July 15, 2003 from Toyodabo for a manufacturing facility in Lebanon, Kentucky. The facility was primarily engaged in the manufacturing of headliners for automobiles. It was determined by the Permit Review Branch that the source did not require a registration. The Division received a registration application from Toyodabo Manufacturing Kentucky LLC on June 21, 2005. This application was for a new adhesive coating operation, the interior door adhesive line. The addition of the interior door adhesive line required Toyodabo to be a registered source. On November 9, 2005 the Division received an application for a Federally Enforceable State Operating Permit (FESOP). This is an operating application for the existing equipment and a construction application for an additional interior door adhesive line.

The primary source of emissions at the facility are two adhesive spray booths. The construction of adhesive spray booth #1 was authorized with the July 2005 registration. This permit will authorize the construction of adhesive spray booth #2, for which construction is projected in December of 2005. The permit will also authorize additional capacity for spray booth #1. Each spray booth is equipped with two High Volume Low Pressure (HVLP) spray guns, which operate simultaneously to coat eight interior door parts.

Insignificant activities are a small natural gas boiler rated at 0.91 MMBTU/HR, surface fabric melt bonding, which is the heat-bonding of headliner components, wet trimming operations of the headliner, spray nozzle cleaning, adhesive line flushing, and sixteen (16) 0.075 MMBTU/HR natural gas space heaters.

COMMENTS:

Each spray booth is equipped with a corrugated paper filter for control of particulate matter (PM) emissions. A control efficiency of 90% is assumed for the purpose of calculating PM emissions. The transfer efficiency of adhesive to the door parts is assumed to be 80% considering the use of HVLP spray guns. There is a bottleneck associated with each spray booth. The total cycle time for the spraying of four (4) premolded boards and four (4) spraying skins is determined as follows:

COMMENTS (CONTINUED):

Time adhesive is sprayed = 50 seconds/gun * 2 guns = 100 seconds

Time to load eight (8) pieces into the spray booth = 24 seconds

Time to unload eight (8) pieces from the spray booth = 24 seconds

Total cycle time = 148 seconds

Fraction of time per hour that adhesive is sprayed = 100/148 = 0.676

Potential hours/year that adhesive is sprayed = 8760 * 0.676 = 5919

Toxic emissions from the source are modeled using SCREEN3. Since the source has multiple nearby stacks, a merged stack analysis is used to evaluate the impact of toxic emissions. This is done by merging the emissions into a single representative stack. The parameters (height, diameter, flow rate and temperature) of the representative stack are determined using the following equation:

$$S_w = \sum_{i=1}^n \left(\frac{m_i}{m_T} (S_i) \right)$$

Where S_w = weighted stack parameter

n = the number of stacks

m_i = mass flow rate from stack i

m_T = total mass flow rate from all stacks

S_i = individual stack parameter

The emissions of methanol are modeled assuming simple terrain and rural surroundings. The automated distance array feature in SCREEN3 is utilized with the minimum distance being 30.5 meters and maximum distance being 5,000 meters. The maximum concentration of methanol occurs at 243 meters. The maximum one-hour concentration of methanol predicted by the model is 29.48 $\mu\text{g}/\text{m}^3$. The maximum annual concentration is estimated to be $29.48 * 0.08 = 2.36 \mu\text{g}/\text{m}^3$. The conversion factor for the averaging time is referenced from EPA Course #423 – Air Dispersion Models. Given the results above, the maximum 1-hour and annual concentrations of methanol predicted by SCREEN3 are well below the threshold standards specified by the EPA Office of Air Quality Planning and Standards (OAQPS) and therefore 401 KAR 63:020, Potentially hazardous matter or toxic substances, is not applicable. The EPA-OAQPS data can be viewed at <http://www.epa.gov/ttn/atw/toxsource/table1.pdf> and <http://www.epa.gov/ttn/atw/toxsource/table2.pdf>.

EMISSION AND OPERATING CAPS DESCRIPTION:

The facility will be subject to an emission cap of 90.0 tons per rolling twelve-month period for VOC emissions. This emission cap will preclude the applicability of 401 KAR 59:225, New miscellaneous metal parts and product surface coating operations.

There is one HAP present in the adhesive, methanol (CAS No. 67-56-1). The source wide potential to emit (PTE) of methanol is 7.38 tons/year. There are no other HAP emissions from this facility in any appreciable amount. The facility requested emission caps of 9.0 tons for single HAP emissions and 22.5 tons for combined HAP emissions in the air permit application received on November 9, 2005. Given the data in the application received on November 9, 2005 this facility will not be granted a 9.0 tons/year allowable for single HAP emissions or 22.5 tons/year for combined HAP emissions since the PTE does not exceed major source thresholds. If the facility alters the process or materials such that HAP emissions increase, it shall be required to submit the appropriate forms specified in 401 KAR 52:030 § 4 and the permit will be revised accordingly if necessary.

PERIODIC MONITORING:

Given that the adhesive spray booths are equipped with corrugated paper filters to control PM emissions, it will not be necessary to determine the mass emissions of PM directly but some monitoring will be required to assure that the filters are working properly. This monitoring will entail daily inspections of the spray booths on days the sprayers are operated to ensure that the filters are in place and operational according to the manufacturer's recommendations. A qualitative visual observation of the opacity of emissions from the over spray emissions shall be required and a log of the observations shall be maintained. If visible emissions from the stack(s) are seen (not including condensed water vapor within the plume), then the opacity shall be determined by Reference Method 9. If emissions are in excess of the applicable opacity limit, then an inspection shall be initiated of control equipment for all necessary repairs.

The source will be required to monitor the twelve-month rolling total emissions of VOC. The source must maintain records of the purchase and usage of adhesives, thinners, clean-up solutions or any VOC/HAP containing material. Product data sheets or MSDS must be maintained onsite for at least 2 years from date of receipt of a VOC/HAP containing material.

CREDIBLE EVIDENCE:

This permit contains provisions which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.